pathogens and causative agents of epidemiological outbreaks.
The specific topic of this presentation is the phage typing of bacterial species, which can be an important method for epidemiological diagnostics. Together with different genetic methodologies – such as PCR-based methods, PFGE, plasmid fingerprinting, and ribosomal typing – phage typing is one method for identifying bacterial pathogens. The method has a high percentage of determination of phage types, high specificity of reaction, and is easy for interpretation and use by health workers. Phage typing was applied for inter-species differentiation of different species of *Salmonella, S. typhi, Brucella spp, Staphylococcus aureus, E. col,i Clostridium deficile, Vibrio cholerae, Yersinia pestis, Yersinia enterocolitica, Lysteria monocitogenes, Clostridium perfringens, Clostridium tetani,* plant pathogens, and other bacterial pathogens.
In addition to addressing the utility and efficacy of phage typing, the paper will discuss the isolation and selection of diagnostic typing phages for interspecies differentiation of pathogens that is necessary step for determination of the source of infection, the route of infection or transmission, outbreaks, epidemics, epizooties, and hospital or nosocomial infections.

Key Words/ Phrases: Bacteriophages, phage typing, detection

Dr. Mzia Kutateladze works at the Eliava Institute of Bacteriophages, Microbiology and Virology since 1987. Since that, she works in the Laboratory of Genetic Engineering and Biotechnology.
Main spheres of her interest are bacteriophages, phage genome and mechanisms of phage-host bacterial cell interaction. M. Kutateladze is a manager of several scientific projects funded by various International organizations. Currently, she is chief of the Scientific Council of the Eliava Institute. She is author of more than 40 scientific publications.

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44. EXPOSURE TO DIFFERENT TOXIC CHEMICALS: A THREAT TO ENVIRONMENT AND HUMAN HEALTH IN MINING SITES IN TANZANIA

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The mining activities in Tanzania have been existed since time immemorial whereby traditional mining was practiced. However until now the country is still endowed with abundant mineral resources including gold, tanzanite diamonds, iron ore, salt, gypsum, gemstones, natural gas, phosphate, coal, cobalt and nickel. The country's major gold fields are located in Geita, Musoma, Tarime, Chunya and Mpanda. During the last decade, local and foreign investors intensified their mining activities in Tanzania. This resulted in increased use of hazardous chemicals like mercury and cyanide which are harmful and toxic. In this report, the extent and impact to long term exposure of such chemicals to both natural environment and animals including human beings will be discussed. Recommendations to local and international investors and policy markers regarding the safe and sustainable use of harmful chemicals will also be discussed.

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45. PROTECTIVE MEASURES WHILE TREATING CWA CASUALTIES

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When Chemical Warfare agent casualties are brought into a medical facility they are usually decontaminated before receiving treatment. The decontamination can range from simply undressing to complex entry/exit procedures for a collective protection medical shelter. It is expected that the decontamination has reduced the contamination to such a degree that there is no more hazard for the medical personnel from emanating CWA vapors. However there is quite some evidence that this is usually not the case and additional protective measures are required in order to have the medical staff operating unhindered and not endangered by albeit low but still hazardous CWA vapor concentrations that at the end of the day would have adverse effects on the capabilities of the medical staff.
In the paper some simple but effective means will be described that will reduce the exposure of the medical staff to.

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46. CONSEQUENCES OF A CHANGING CBRN THREAT

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The OPCW now counts 186 member States. Member States that possessed chemical weapons (CW) are destroying those weapons, albeit at a slow pace. In the coming decade most, if not all, of the 100.000 + tons of CW from the previous century will have been destroyed. Of the 12± States, not part of the OPCW, four of them potentially have CW but their quantities are restricted to less than 1000 tons. About one kg of the more potent nerve agent or Mustard gas is required to produce on average one casualty amongst unprotected troops, 1000 tons potentially can produce 1 million casualties. Protection, passive chemical defense, is therefore mandatory.
However, once a detection and protection system is in place, with a protection factor of say one thousand, the amount required to produce one casualty amongst troops in a military scenario becomes prohibitive. Furthermore, available CW quantities will have been reduced by pre-emptive airstrikes and the aggressor will have little chance to fully deploy his CW capability. The threat from massive CW with units facing several attacks per week has changed to incidental attacks on a smaller scale and with far lower frequency. This should have consequences for the chemical defense posture of the forces, Detection and protection are still required but the protection can have a lower capacity, less spares per individual.
Because the number of incidents will be far lower it might be more cost effective to abandon contaminated equipment than to decontaminate it. As the number of CW casualties entering the military medical system will be small it might be better to find cures for diseases from biological weapons than to spent money on improved therapies for nerve agent or mustard. Although research in CW medical over the last 50 years was great, it has not produced a therapy for mustard or a significant improvement over the old therapy for nerve agent poisoning.
With a declining CW threat the BW threat is on the rise, making a passive biological and chemical defense system even more desirable for the military. Detection, protection, medical countermeasures and decontamination for bio agents have all gained importance. However it should be stressed Please note that bio agents are a respiratory and not a skin hazard. Also note that level C and D impermeable protective suits, common for CBRN first responders show a much lower protection both for BW and CW than the air permeable suits as used by the military.
Toxic industrial chemicals and materials (TICS/TIMS) form another potential threat. The military should plan operations at a safe distance from storage or production sites (easily found using Google earth). If terrorists were to drive a truckload of TIC's close to operating military, the military should adopt as quickly as possible the protective posture and retreat to a safe distance from the TIC. In the presentations it will be shown that the statements in the abstract above are correct.

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47. NEW STRATEGIES BASED ON BIOMEDICAL APROACHES FOR DEVELOPING COUNTERMEASURES AGAINST RADIATION AND NUCLEAR EMERGENCY

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Biomedical and radiological research projects are essentially aimed to understanding, evaluation and modification of ionizing radiation induced effects on microorganisms, plants, animals and humans. It is widely recognized that control and management of radiation injury are central to safety assurances for peaceful applications of nuclear energy and radiation technology. Extensive radiobiological research in the past decades have allowed gaining the deeper insight of molecular mechanisms of radiation damage in vital cellular targets, namely, DNA, membrane, proteins and signaling cascades. The radiation induced damaging events in living cells are believed to be mediated by direct as well as indirect effects of radiation on the components of cells involving highly reactive free radicals which has provided basis for developing protocols for radioprotection and cancer radiotherapy. Cellular responses are subject to nature and dose/dose rates of radiation which are eventually reflected in the severity of health effects of population. Radiobiology research has a long-standing goal in understanding the risk, prevention, and treatment of damage to normal tissue after radiation exposure of healthy populations and also, in cancer treatment. However, much remains to be learned in terms of underlying molecular process and factors controlling the radiation injury. Developing high through put diagnostic tools for detection and biomarkers for assessing radiation exposures are immediate challenges for policy planners, administrators, medical experts and safety officials in the management and control of mass exposures from nuclear radiation.
Present world is faced with a rather new threat scenario from radiological and nuclear attack using radiation and radioisotope material by so called determined groups. To address the threat, new research efforts are required in developing safe and effective countermeasures against radiation emergency. It has become urgent to identify the critical gaps in knowledge and lack of capabilities in radiobiological research for developing goal-oriented medical countermeasures that could be broadly applied to large population in nuclear attack situation. The need is to design and develop new and rapid diagnostic assays, development anti-radiation drugs and mass community-oriented medical therapies for radiation exposure to successfully assess, diagnose and treat the exposed people by countering the radiation injury after a nuclear attack. In addition, role of radiobiology trained professionals would be vital in psychological boosting of responders as well as public in emergencies apart from competence in helping in source identification, injury evaluation and appropriate communication to media. Radiation experts would be helpful in advising to the decision makers and local administrators in taking suitable steps to mitigate and treat the victims for saving their life.

Will not be presented
